



2012 November Recharge on the Big Wood

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2012 November Recharge on the Big Wood River

Background

- Repairs of a Leaky Hydraulic Oil Line Results in Discharge of $\approx 53,100$ acre-feet
- Two Releases from Oct. 29 - Dec. 7
- Two gages available
 - (1) 13142500 (Big Wood blw Magic)
 - (2) 13152500 (Malad River nr Gooding)
 - (3) 13142000 (Magic Reservoir, record ends 10/02/2012)

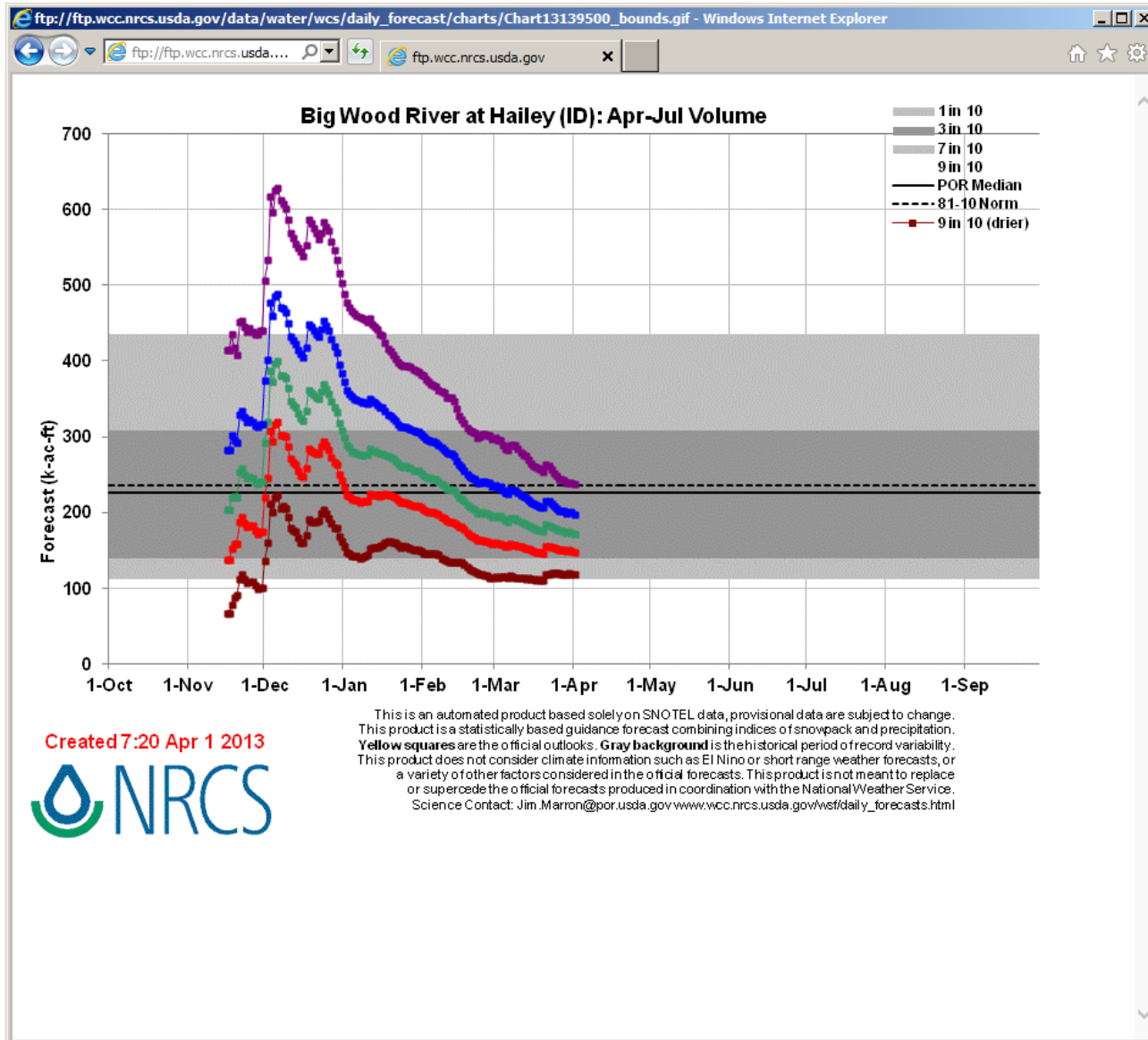
Irrigation Water Supply Forecast

Reservoir Content

- December 31st 2012, 18,400 acre-feet
- January 31st 2013, 23,000 acre-feet
- February 28th 2013, 27,000 acre-feet
- April 1st 2013, 41,049 acre-feet
 - 90% Streamflow Frcst 117,500 acre-feet
 - 70% Streamflow Frcst 148,000 acre-feet
 - 50% Streamflow Frcst 172,000 acre-feet
 - 30% Streamflow Frcst 197,900 acre-feet
 - 10% Streamflow Frcst 237,000 acre-feet

January
SWE = 130%

April
SWE = 79%



Irrigation Water Supply Forecast

Water Supply with and without Release (275,000 acre-feet needed)

NRCS Streamflow Forecast	Without Release	With Release
90% exceedance	211,649	158,549
70% exceedance	242,149	189,049
50% exceedance	266,149	213,049
30% exceedance	292,049	238,949
10% exceedance	331,149	278,049

* *This forecast is based on the Daily Guidance Forecast

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Project Objectives

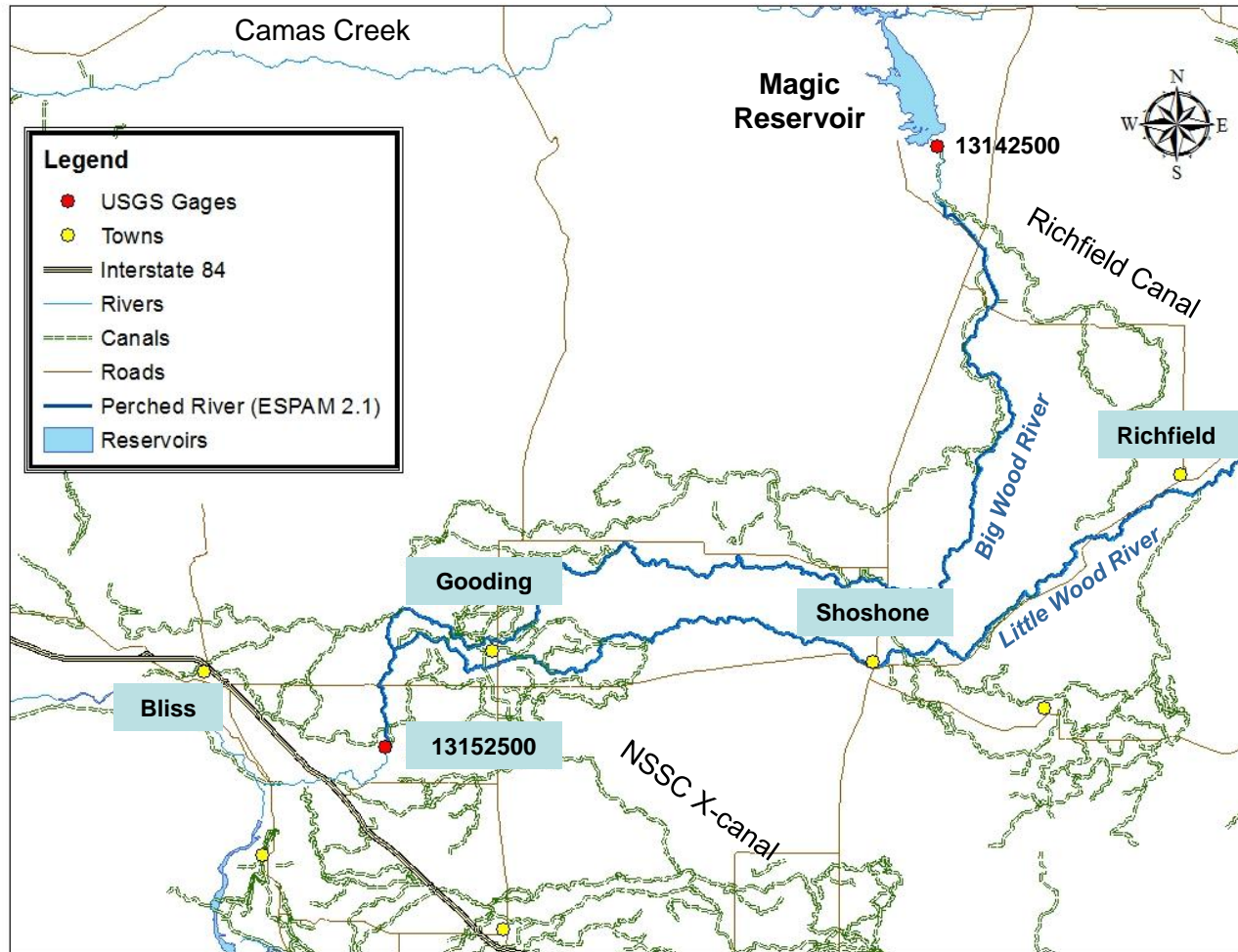
- Quantify Recharge from the Magic Reservoir Release
- Model Impacts to Aquifer Heads and Spring Discharge
- Compare Modeled vs. Observed Results

Quantify Recharge (1)

Assumptions

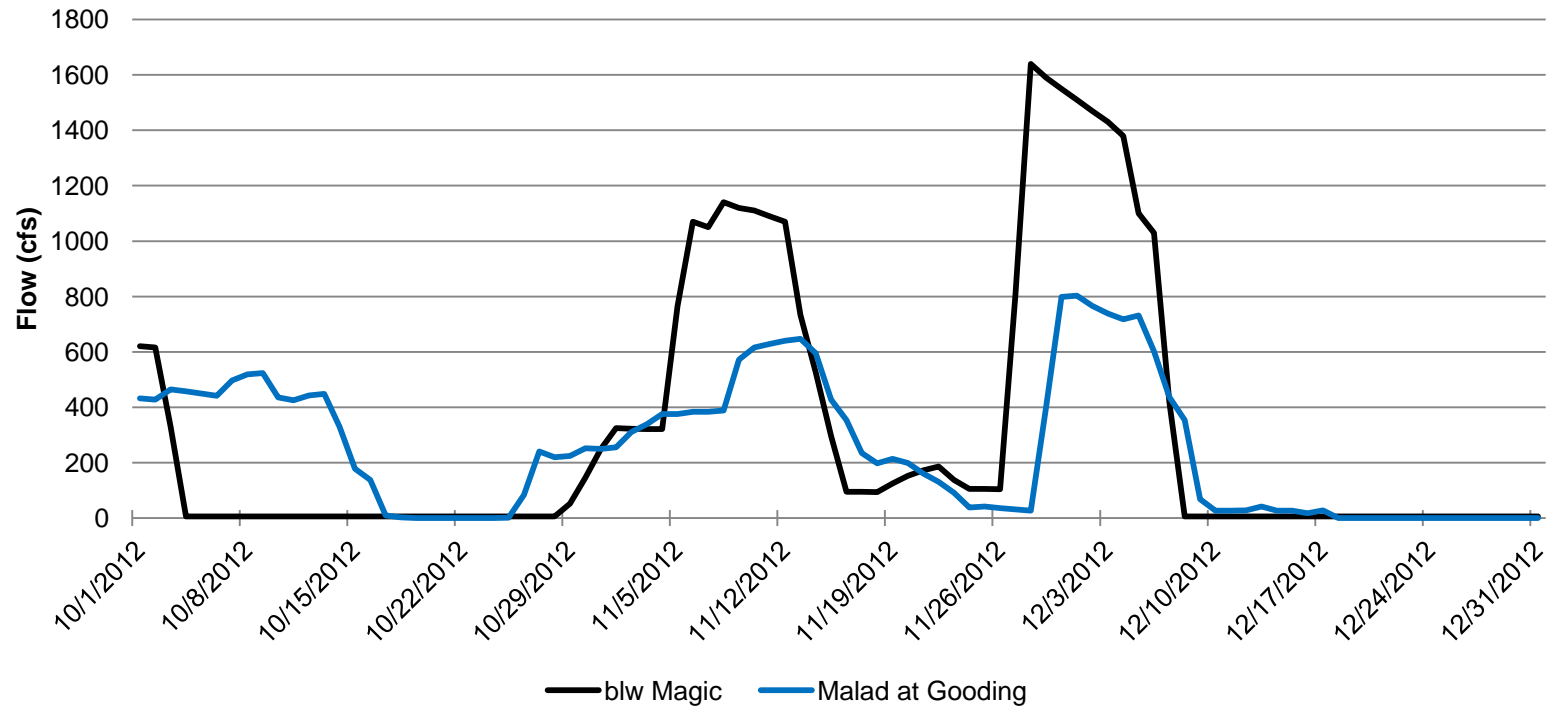
- Recharge is represented by the loss between the Big Wood gage blw Magic and Malad River gages.
- Recharge is distributed evenly along 61 perched river cells.
- Ignored recharge from the Richfield Canal which delivered a small quantity of water to the Little Wood River at the beginning of the event.

Study Area



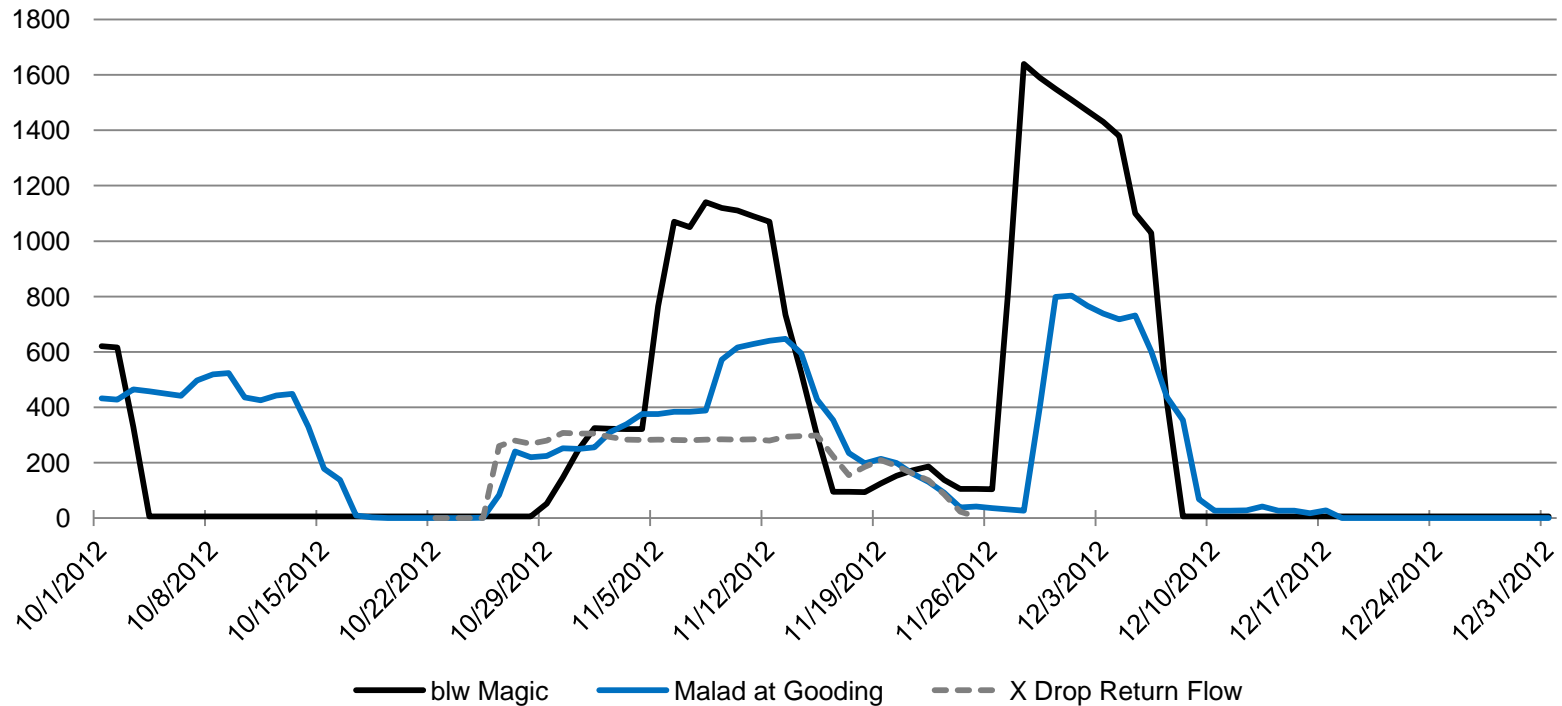
Quantify Recharge (2)

Stream gage data



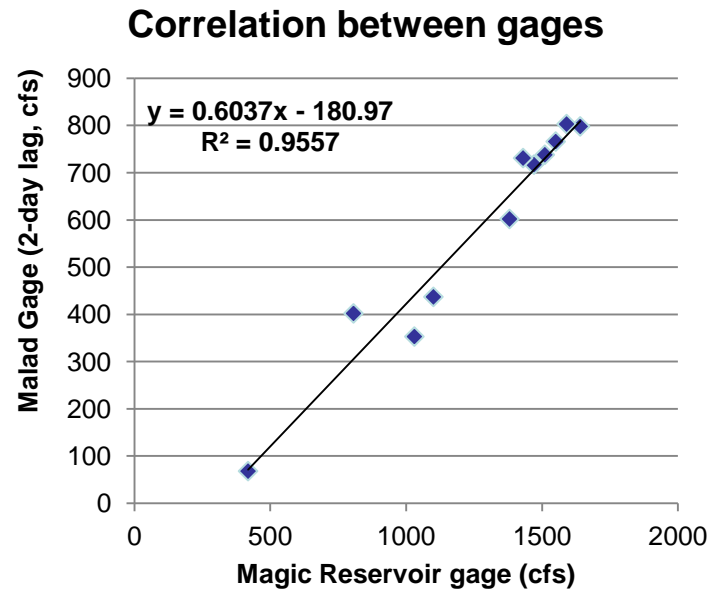
Quantify Recharge (3)

Stream gage data



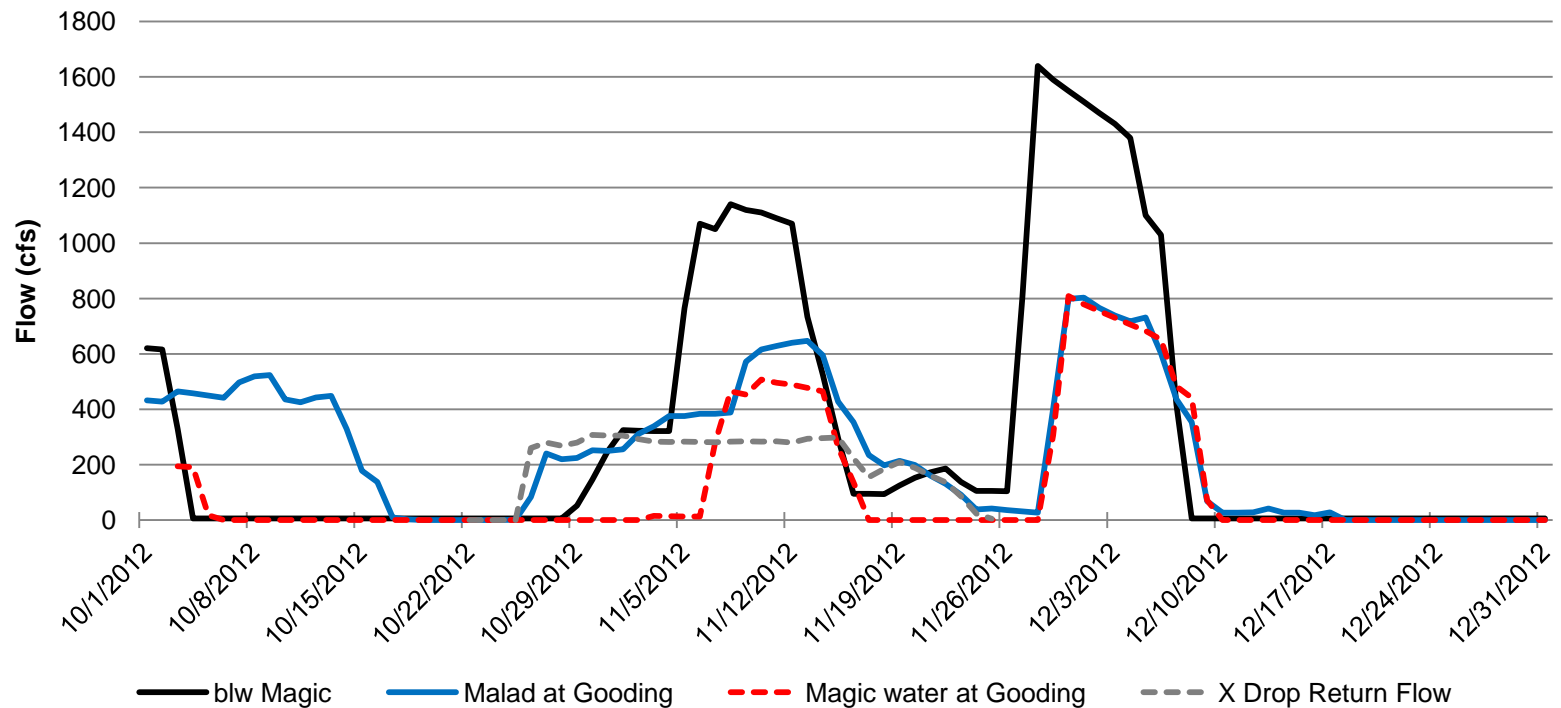
Quantify Recharge (4)

Note the lag at the Malad River Gage

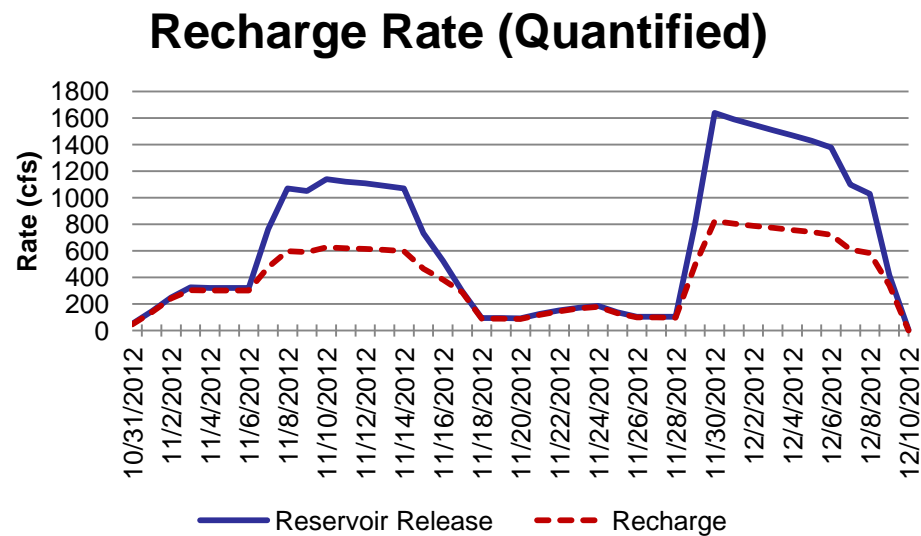


Quantify Recharge (5)

Stream gage data

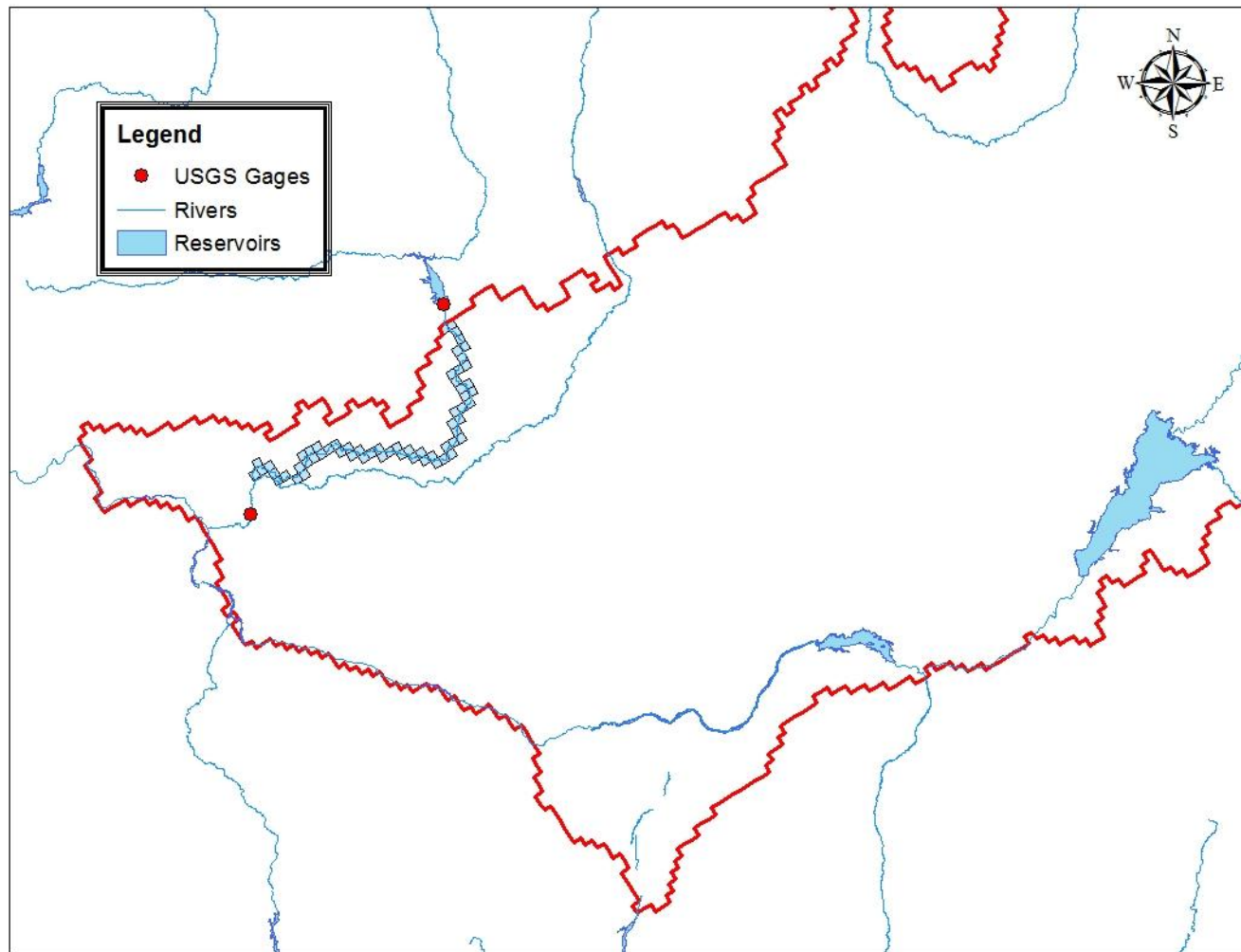


Quantify Recharge (6)

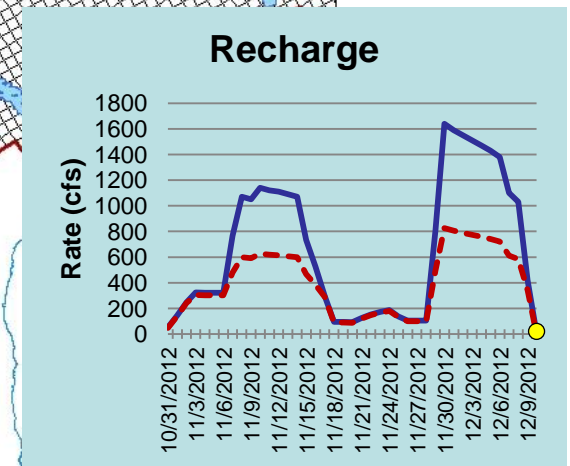
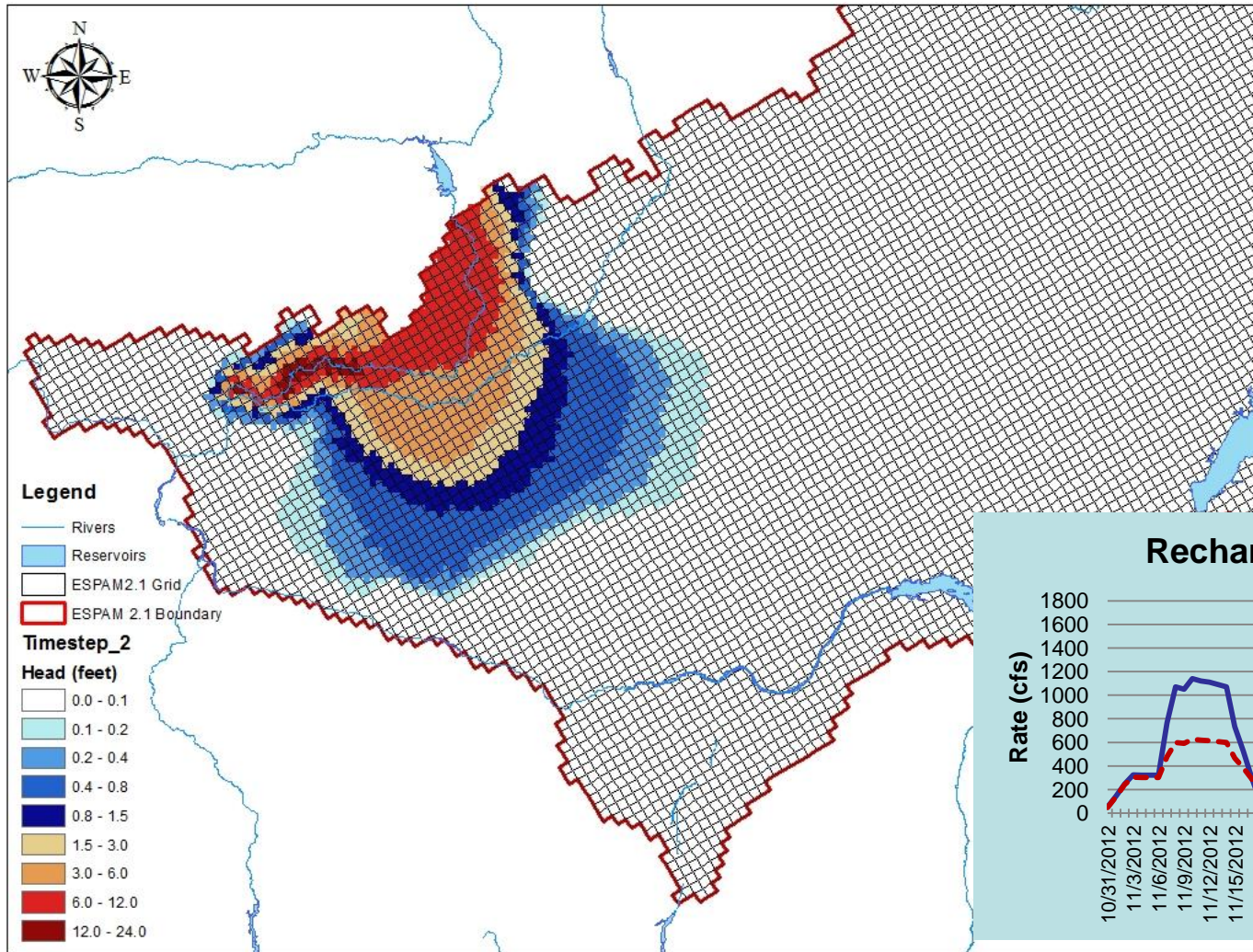


Recharge \approx **32,248** acre-feet

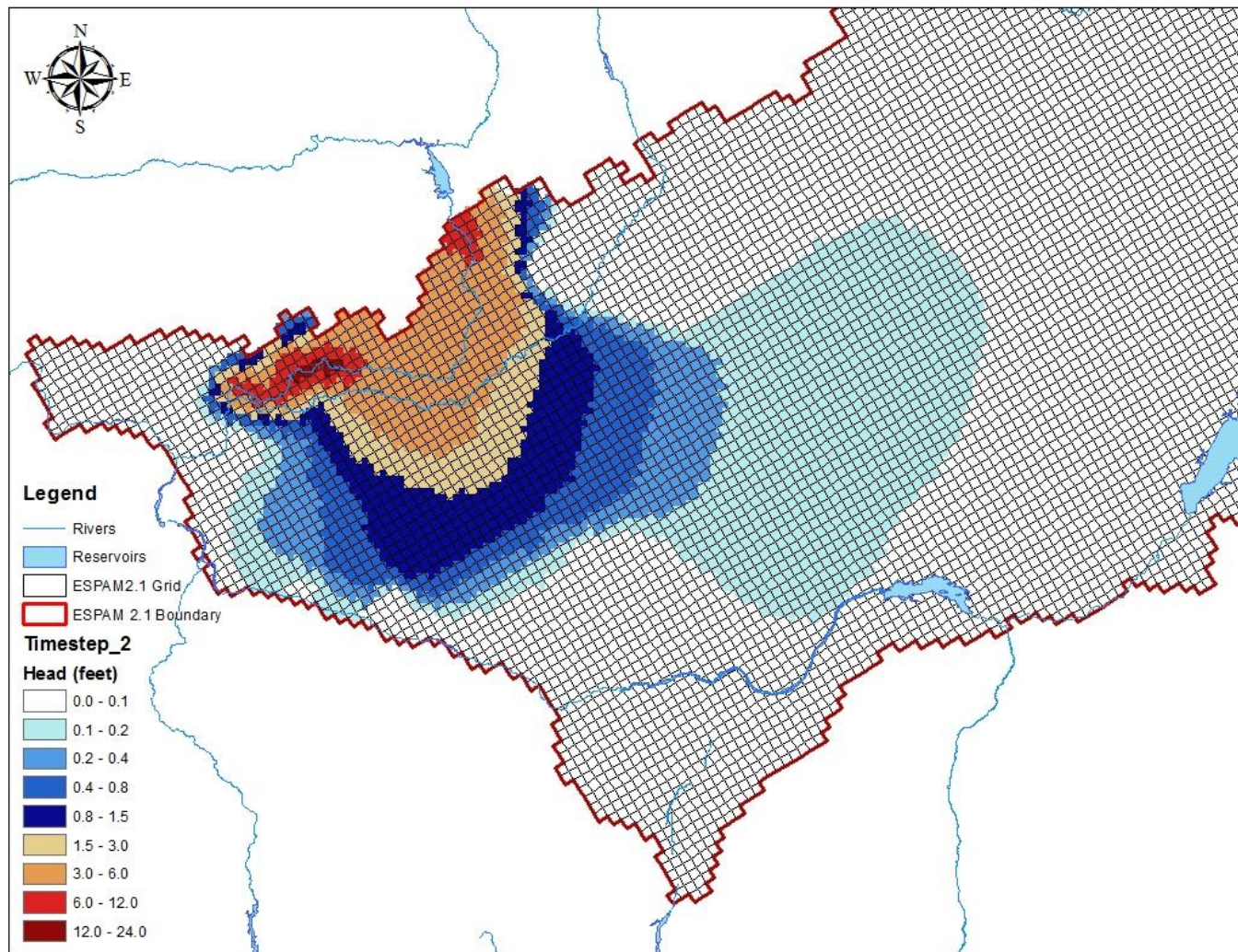
Modeled Impacts to Head--Cells



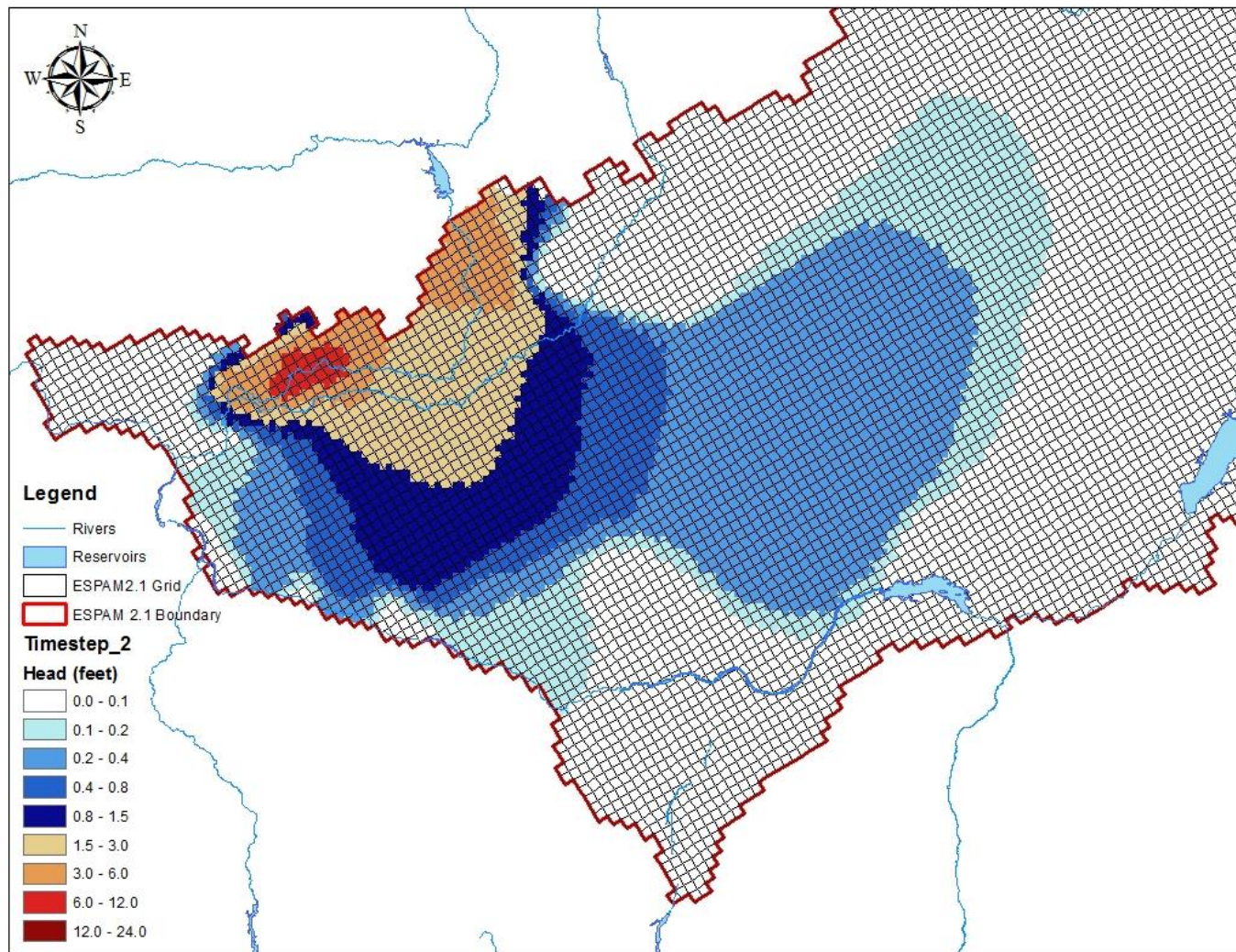
Modeled Impacts (Day 40)



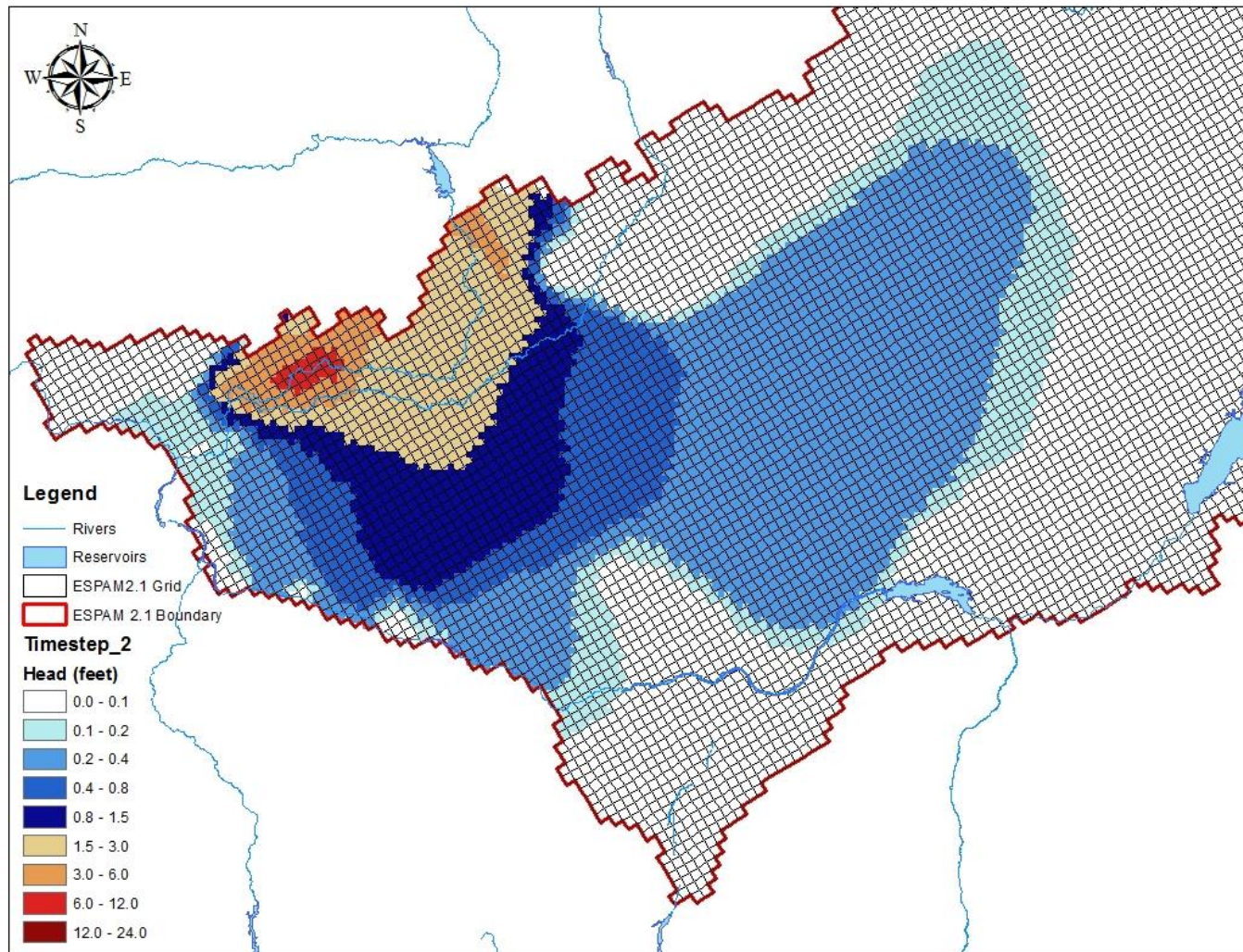
Modeled Impacts (Jan 1st, 2013)



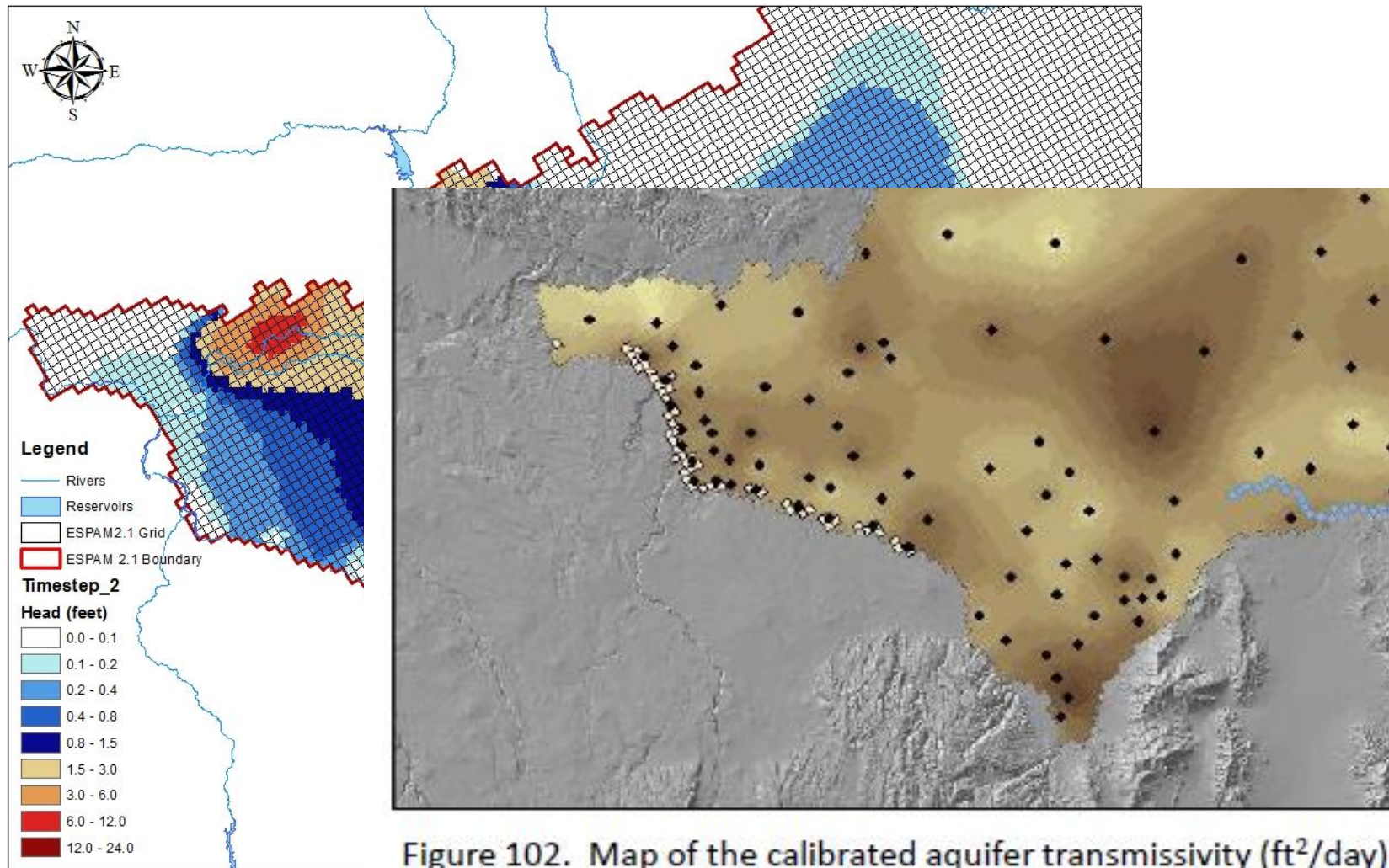
Modeled Impacts (Feb 1st, 2013)



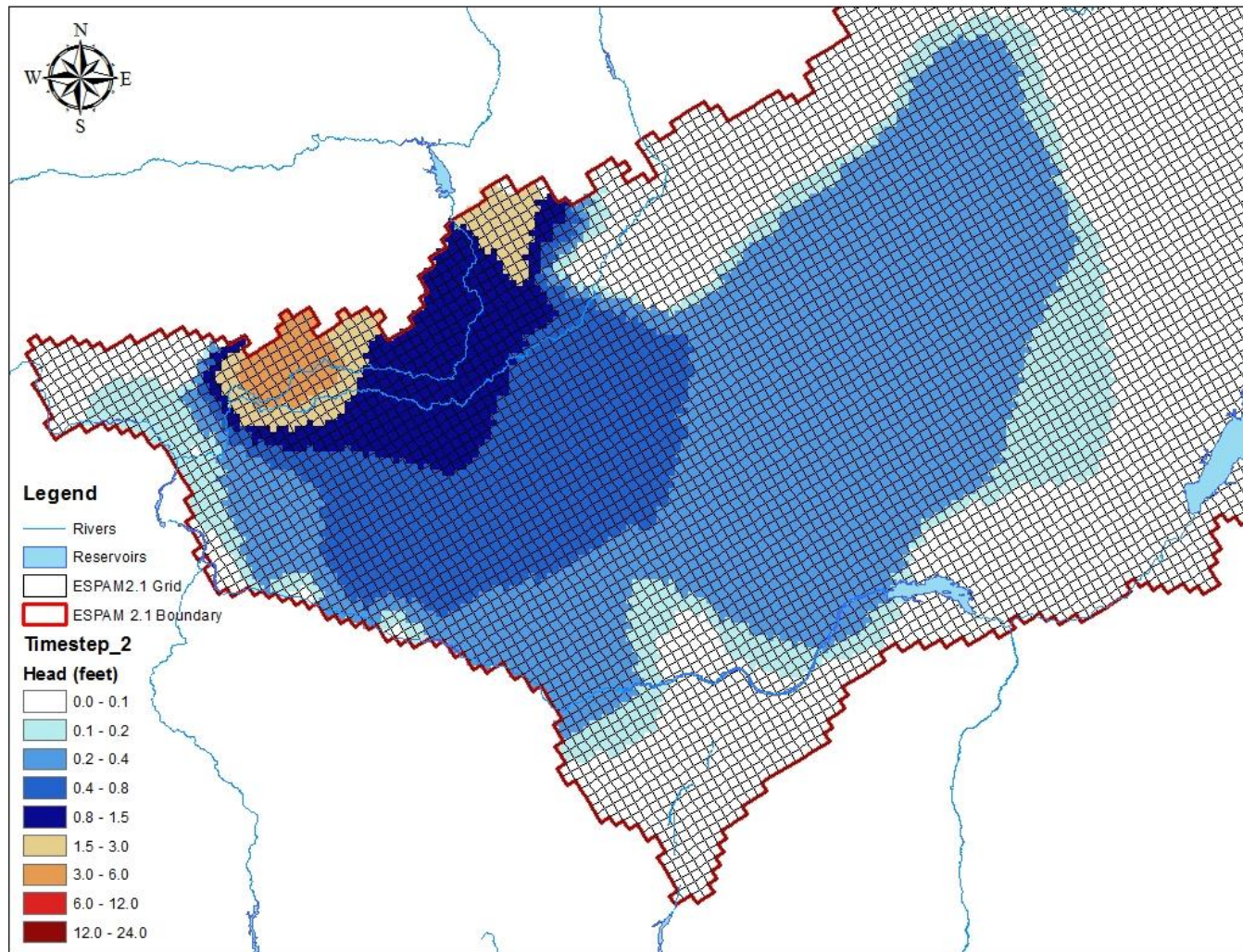
Modeled Impacts (Mar 1st, 2013)



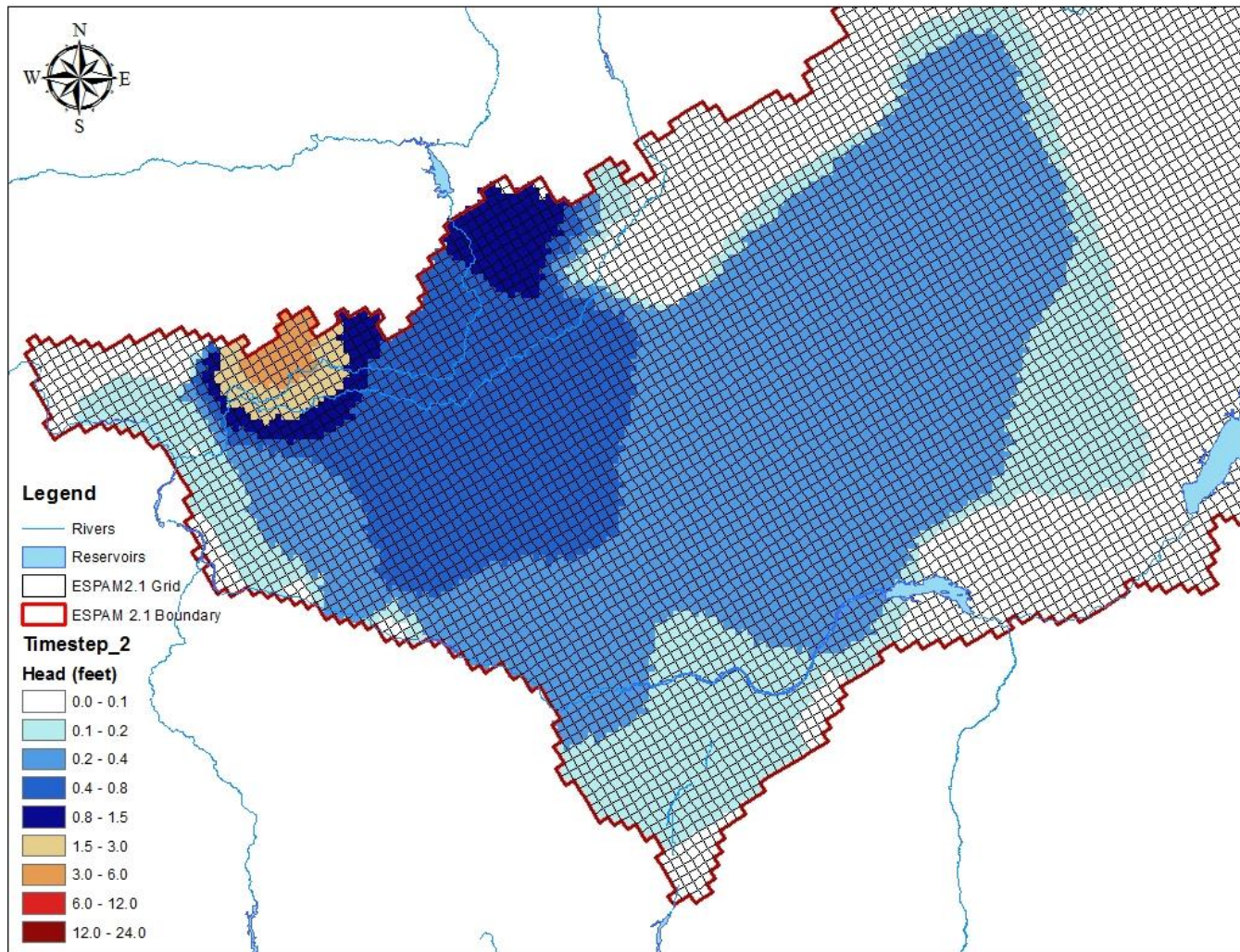
Modeled Impacts (Apr 1st, 2013)



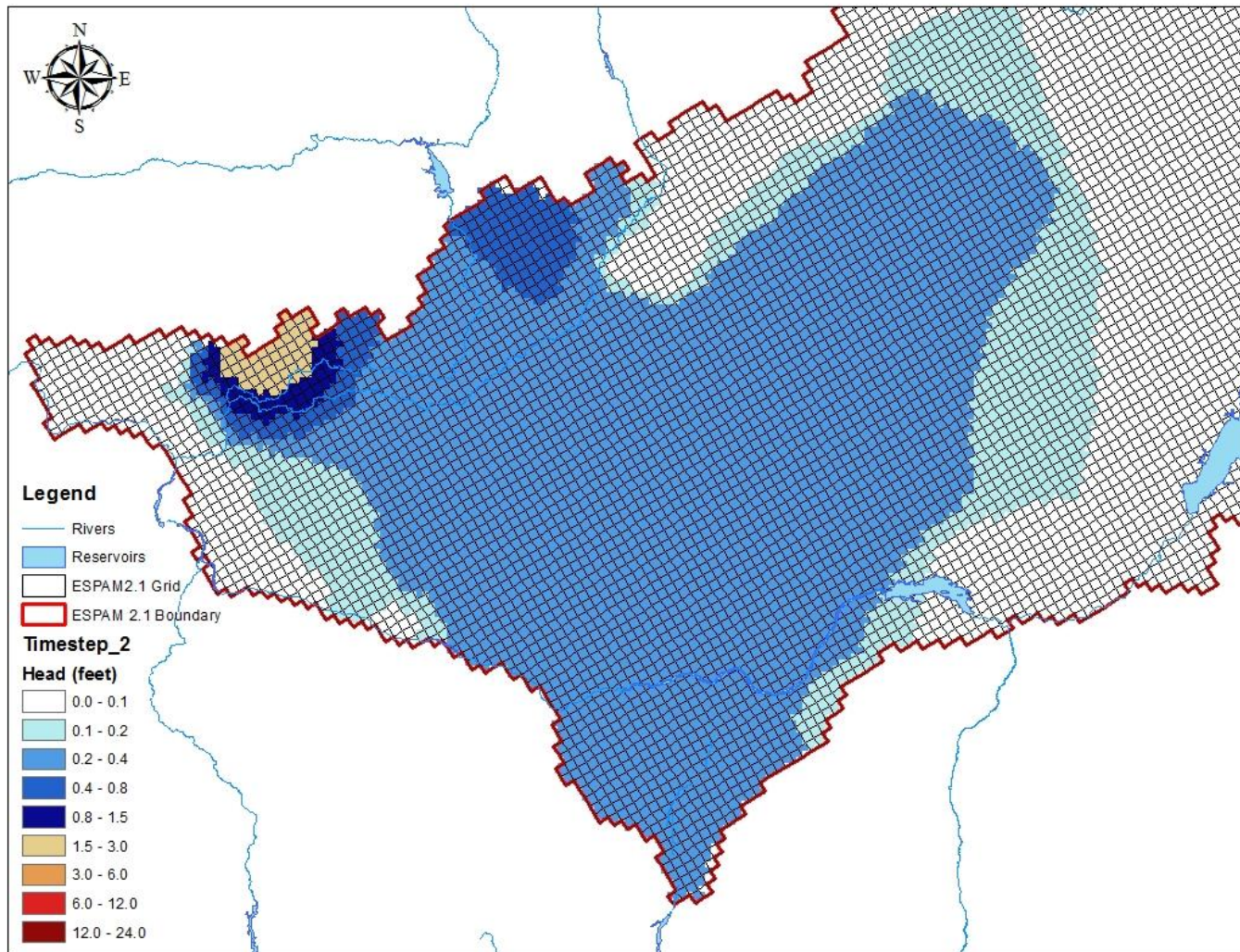
Modeled Impacts (July 1st, 2013)



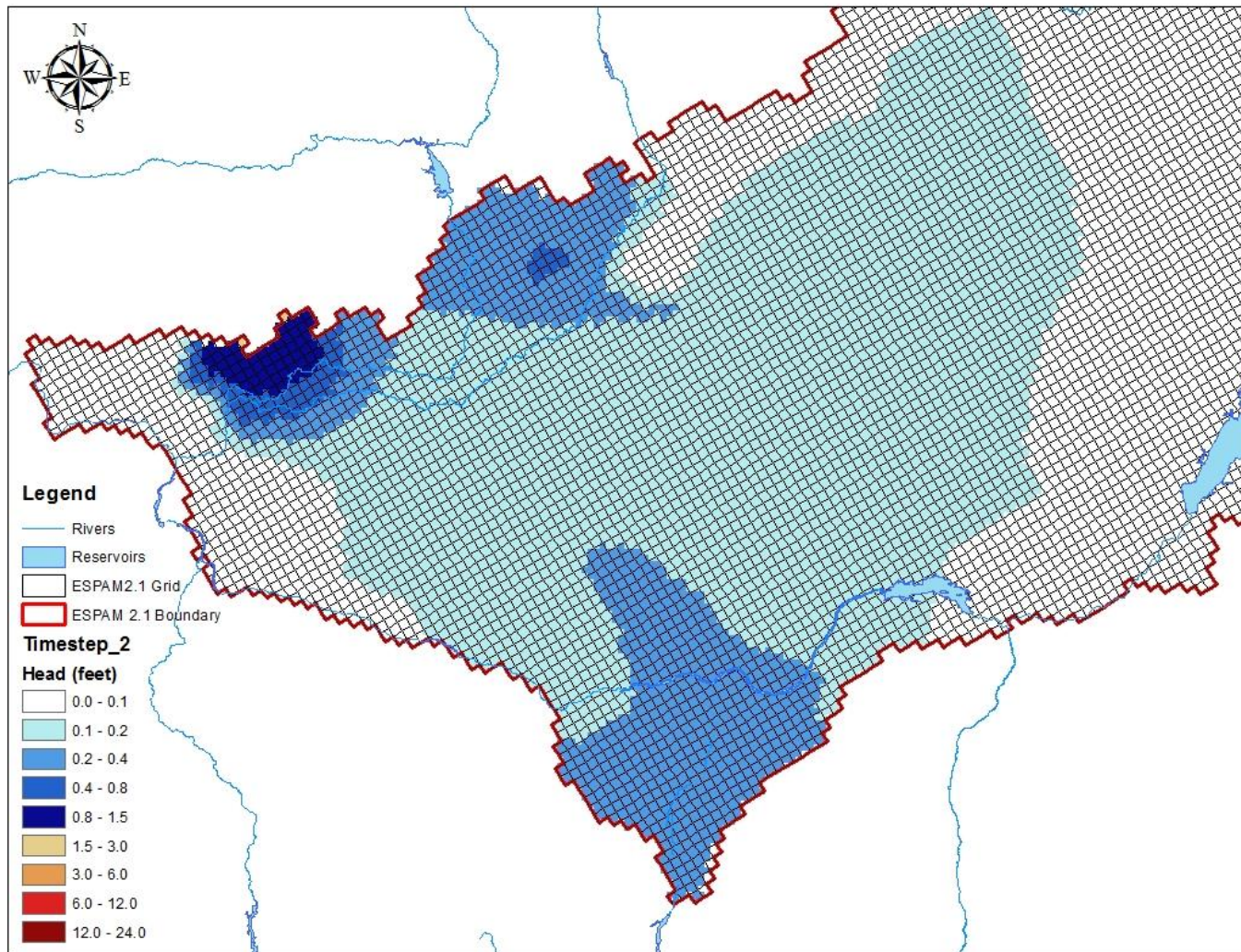
Modeled Impacts (Nov 1st, 2013)



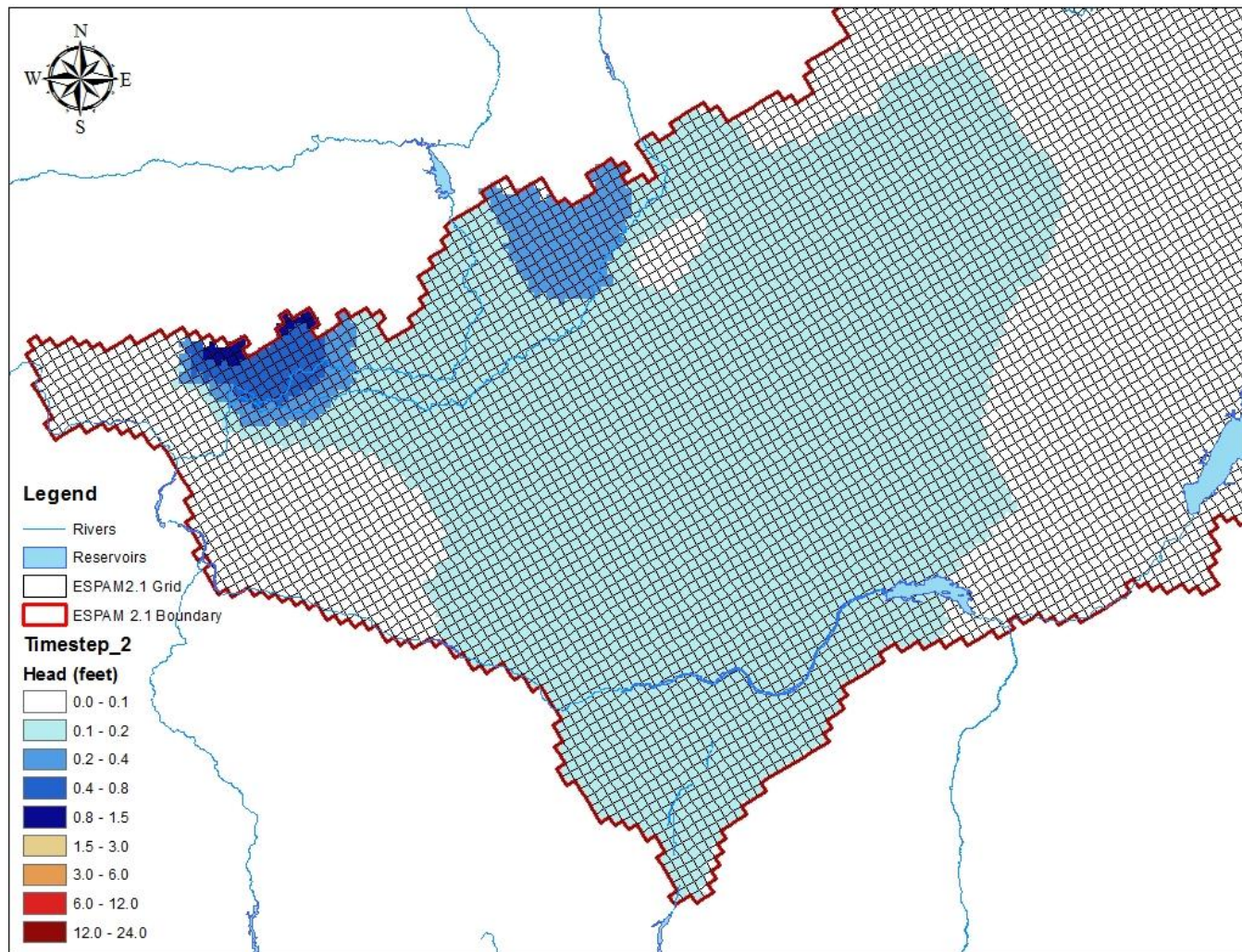
Modeled Impacts (Nov 1st, 2014)



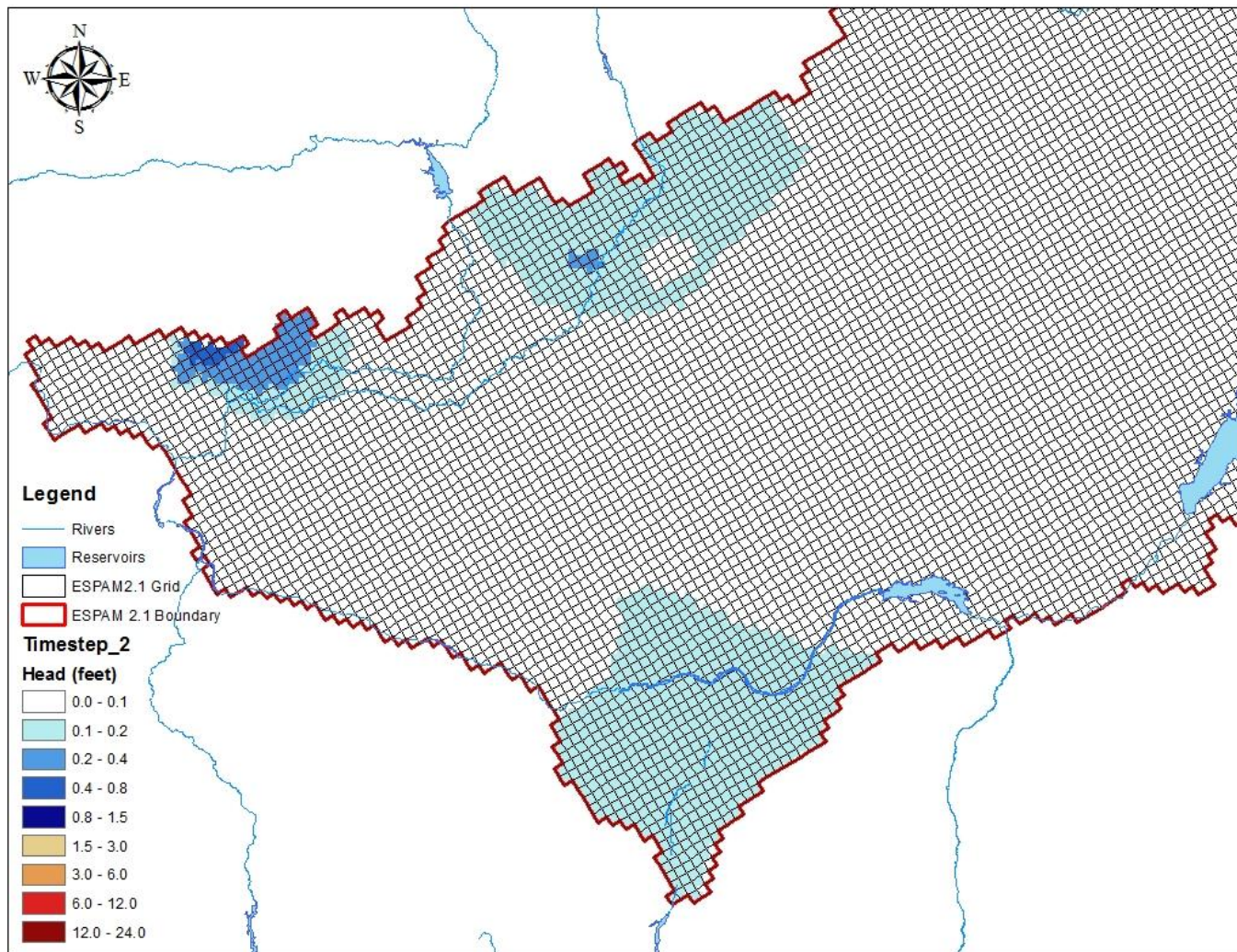
Modeled Impacts (Nov 1st, 2015)



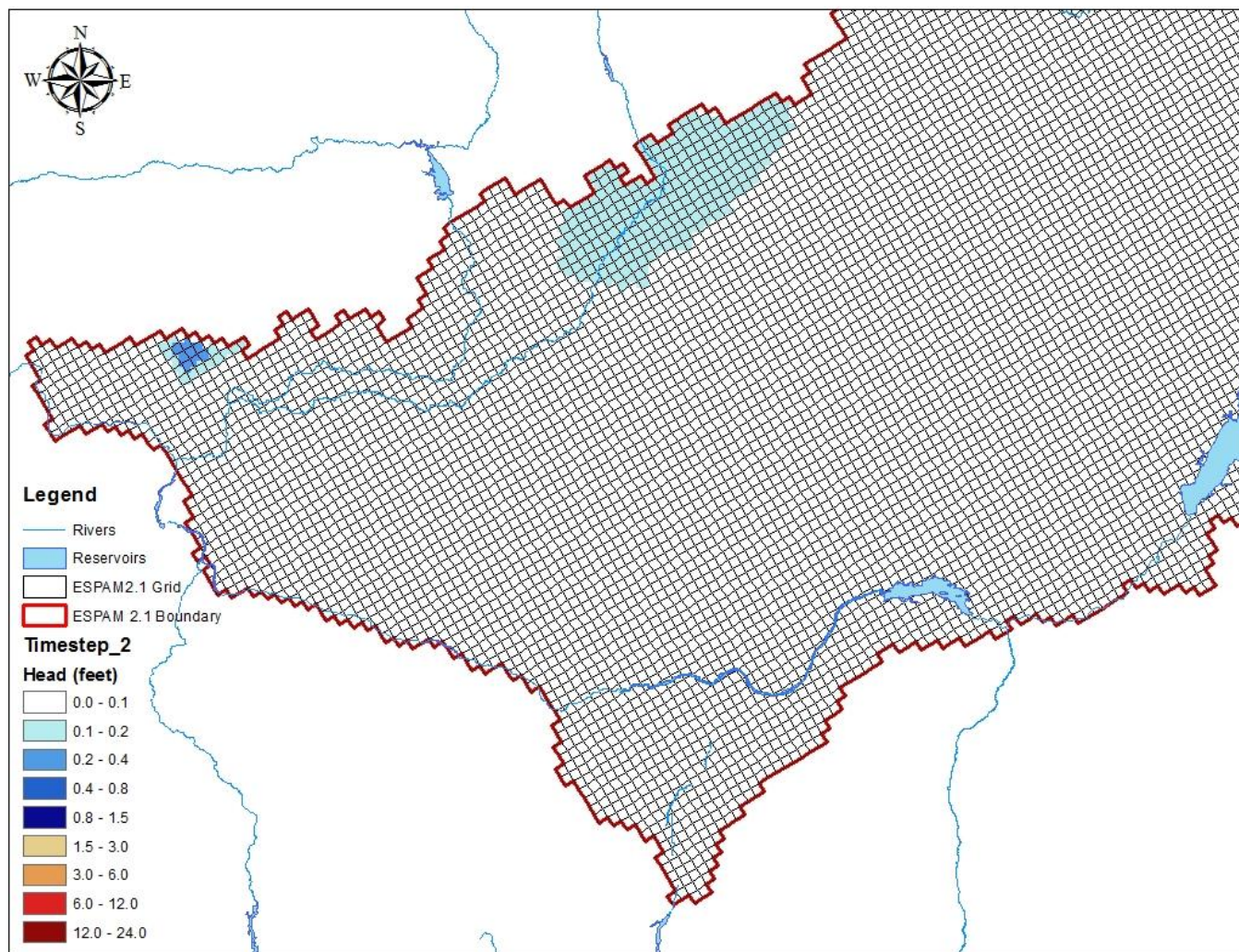
Modeled Impacts (Nov 1st, 2016)



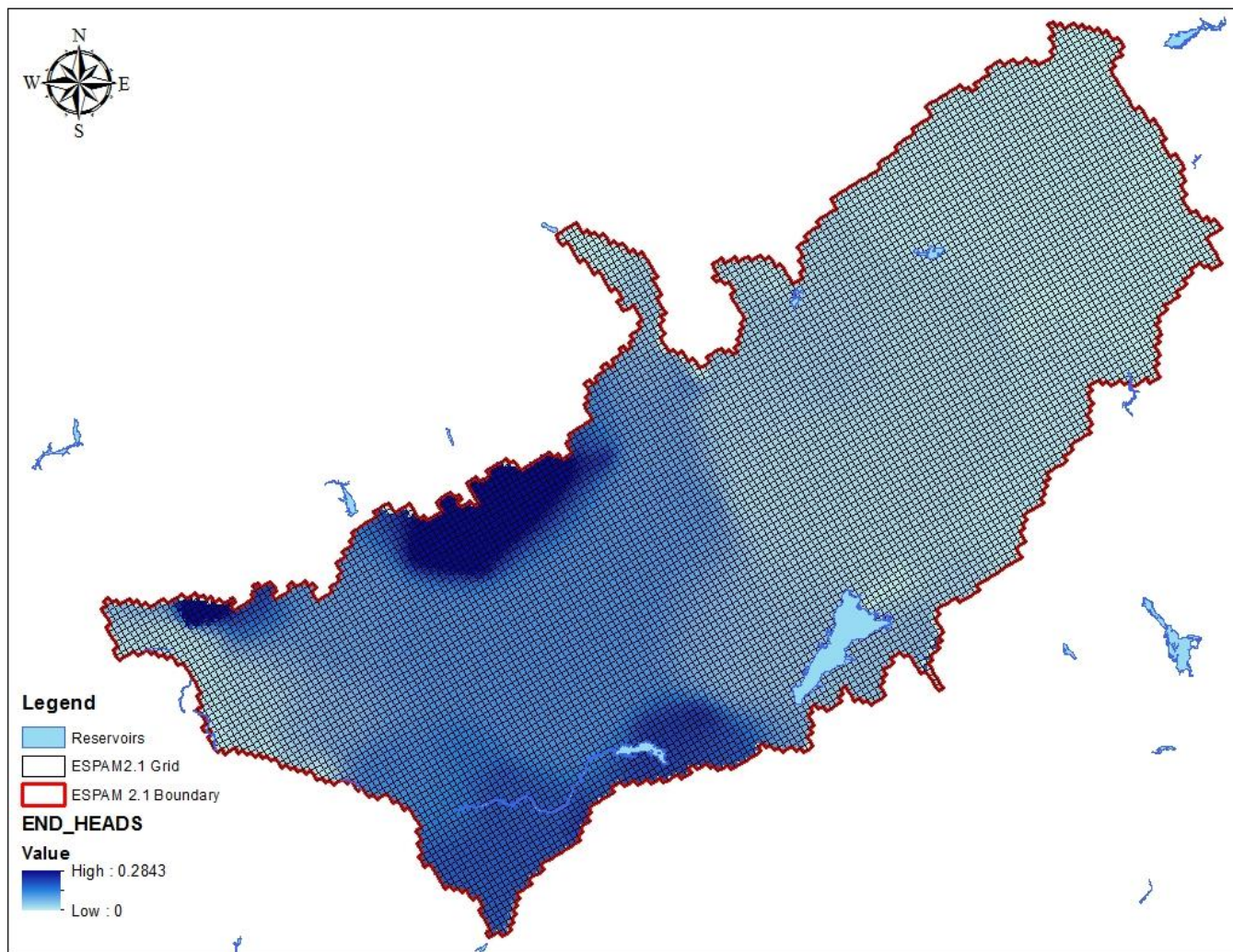
Modeled Impacts (Nov 1st, 2018)



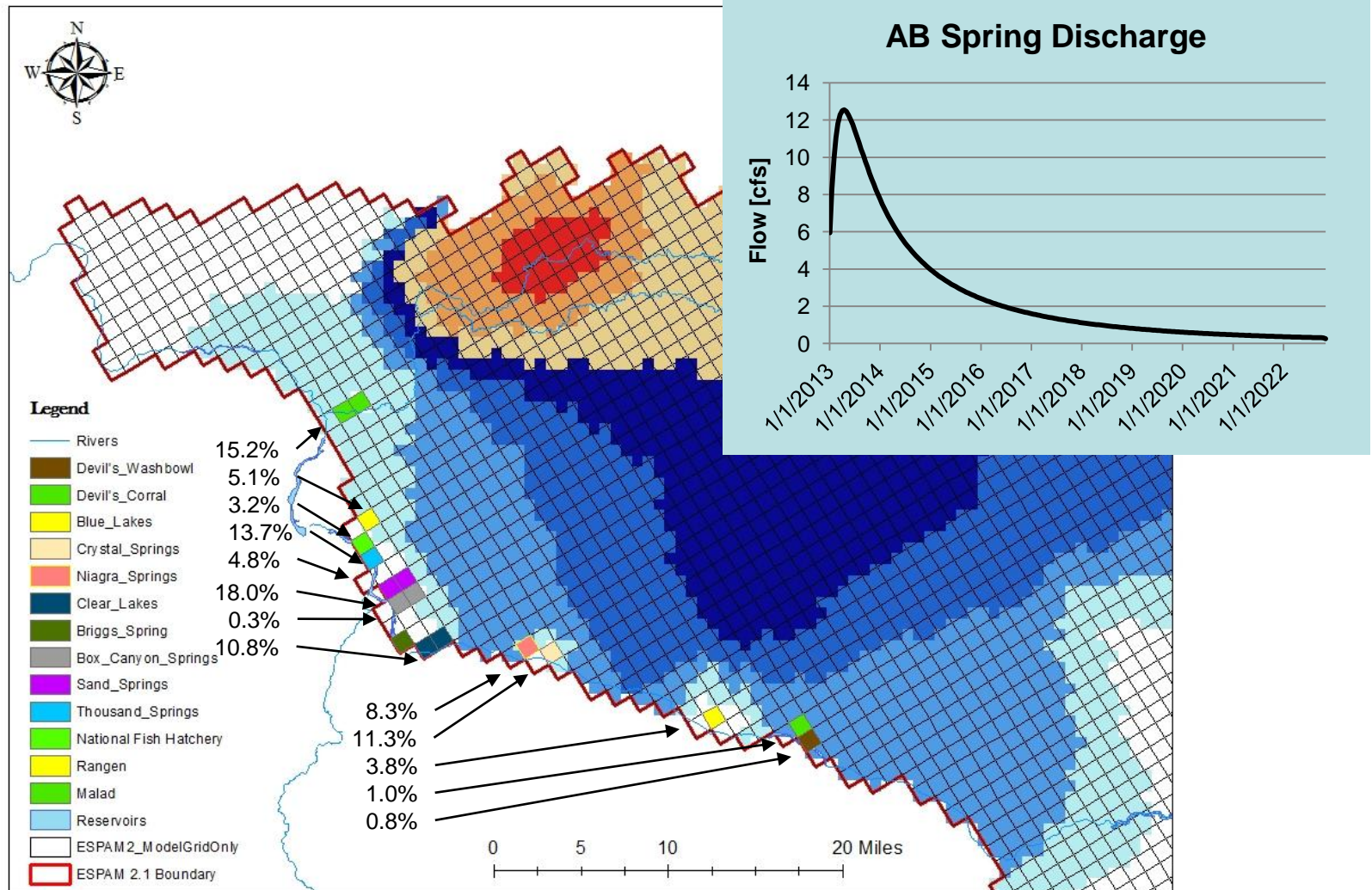
Modeled Impacts (Nov 1st, 2022)



Modeled Impacts (Nov 1st, 2022)



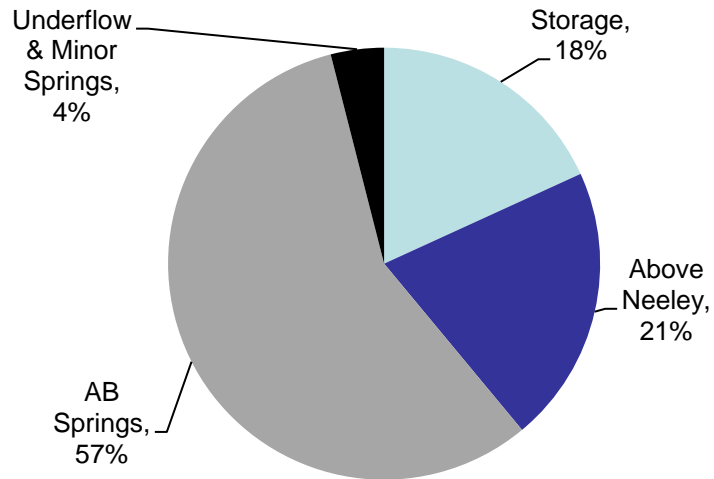
AB Spring Discharge 18,400 ac-ft / 10yr



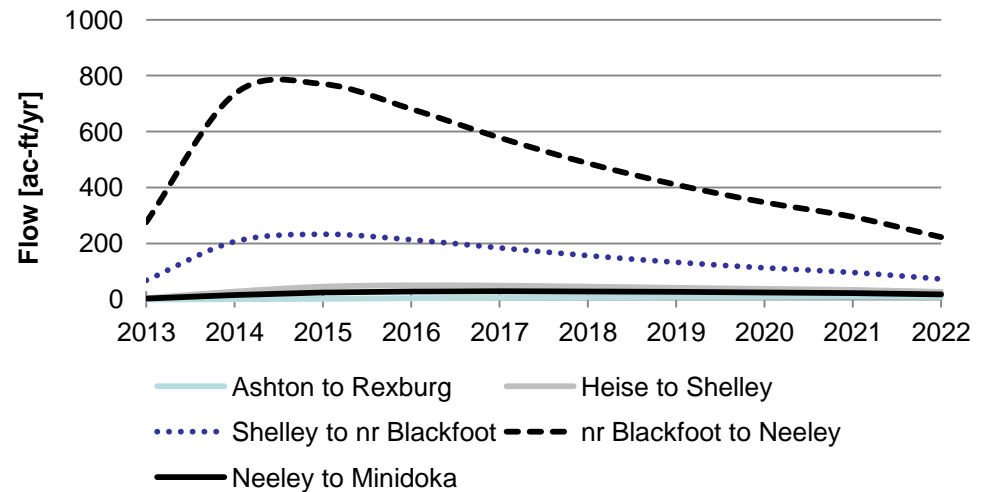
Spring	Maximum Discharge Date	Max Discharge [cfs]	Discharge 2008 [cfs]	Total 10-yr [ac-ft]
Malad	Late June	1.6	1003	15.2%
Three Springs	Late May	0.5	--	3.8%
Rangen	Early May	0.6	13	5.1%
National Fish Hatchery	Early May	0.4	155	3.2%
Thousand Springs	Mid April	1.7	533	13.7%
Sand Springs	Early April	0.7	45	4.8%
Box Canyon Springs	Late March	2.5	320	18.0%
Briggs Springs	Late March	0.0	95	0.3%
Clear Lakes Springs	Late March	1.5	407	10.8%
Niagara Springs	Late March	1.2	216	8.3%
Crystal Springs	Late March	1.6	432	11.3%
Blue Lakes	Late June	0.4	177	3.8%
Devils Corral	Late July	0.1	33.8	1.0%
Devils Washbowl	Late July	0.0	5.8	0.8%

Impact on River Reaches

Recharge Distribution



Snake River Reaches above Minidoka



Fate of Recharge Water over 10-years [ac-ft]

